Dec. 12, 1933. G. F. ALBERS 1,939,481

UNIVERSAL ACTION ELECTRIC FAN

Filed Nov. 27, 1931 3 Sheets-Sheet 1

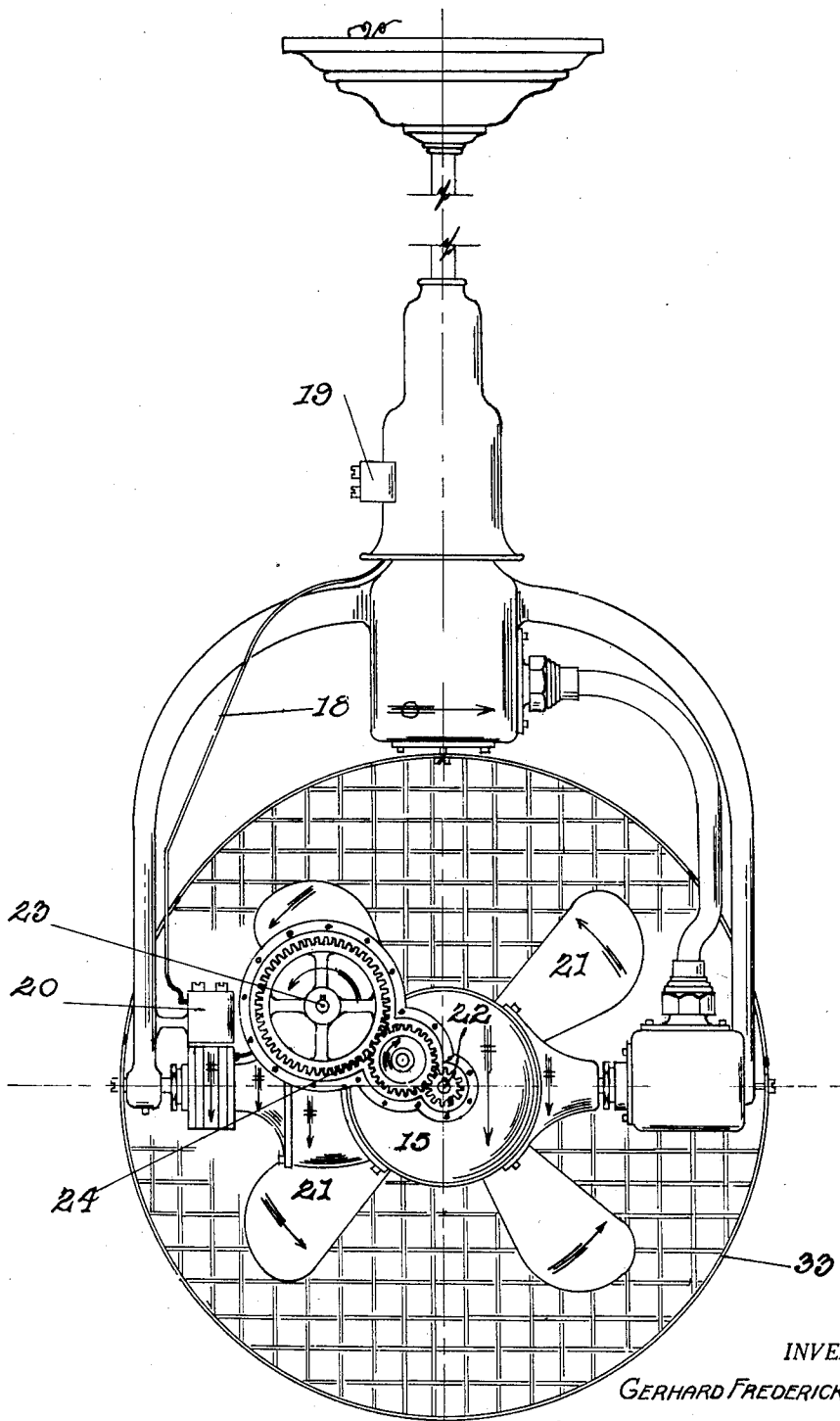


Fig. 1.

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Fig. 4.

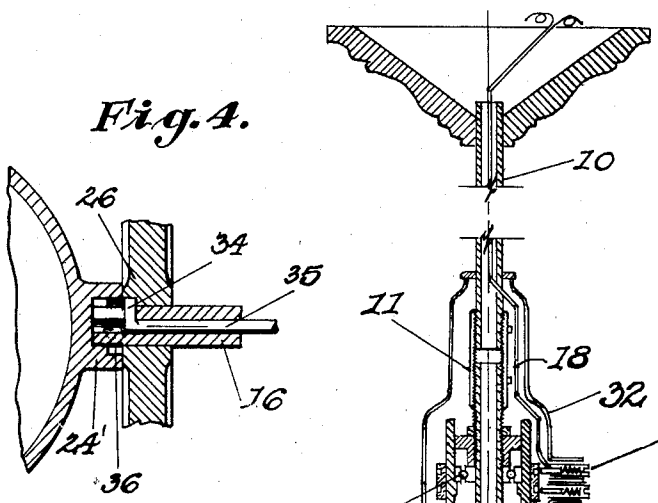


Fig. 2.

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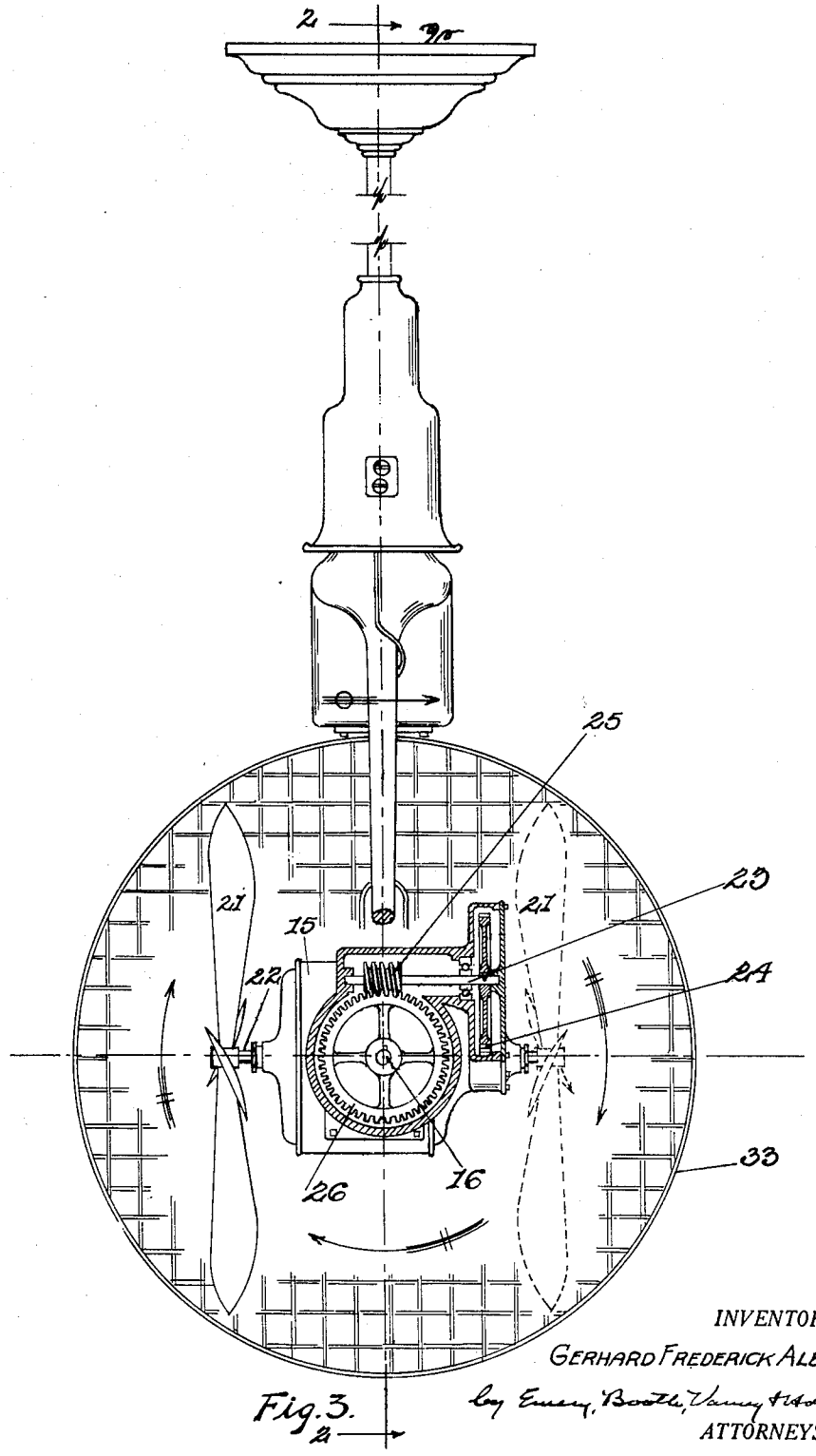


Fig. 3.

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Patented Dec. 12, 1933 1,939,481

UNITED STATES PATENT OFFICE

1,939,481

UNIVERSAL-ACTION ELECTRIC FAN

Gerhard Frederick Albers, Charleston, S. C.

Application November 27, 1931
Serial No. 577,632

4 Claims. (Cl. 230—254)

My invention aims to provide an improved fan and mounting for air agitating and conditioning purposes.

One of the features of my invention is its ability to rotate in such a manner that the revolving blades are directed in all directions in the course of the rotation of the fan. This permits the air in a room, for example, to be agitated sufficiently for efficient conditioning without creating a draft and without discomfort to occupants.

In the drawings:

Fig. 1 shows an elevation of my invention with a portion of the fan gear casing removed;

Fig. 2 shows a section taken on line 2—2 of Fig. 3;

Fig. 3 shows a part side elevation and part cross section of the same on the line 3—3 in Fig. 2; and

Fig. 4 shows an enlarged section of the rotary fan control clutch.

In the particular embodiment of my invention selected for illustration herein and shown in the drawings, a gimble type universal support is used and includes a stationary support 10 of any suitable design which is secured, for example, to the wall, floor, or ceiling of a room. This support may be formed in two sections with a suitable means 11 for coupling them. Rotatably mounted on the lower end of support 10, by means of bearing assemblies 12, is a substantially U-shaped support having arms 13 and 14. A power-driven fan unit, which is shown as an electric motor 15, is mounted between the arms 13 and 14 on shafts 16 and 17. I have shown the shaft 16 rigidly secured to arm 13 and journaled in the casing of the motor 15, and shaft 17 rigidly mounted in the opposite side of the motor casing and journaled at the end of arm 14.

Electrical connection to the motor 15 is provided through conductors 18 and brush contact members 19 and 20. Sets of fan blades 21 are mounted on opposite ends of the motor shaft 22, and a shaft 23 is driven by the fan shaft through gear train 24. A worm 25 on shaft 23 drives the gear 26 keyed on shaft 16.

On the outer end of shaft 17 is secured bevel gear 27 which engages a similar, but slightly larger, gear 28 connected to the flexible shaft 29. The bevel gear 30 on the other end of the flexible shafting meshes with and is driven around a similar but slightly larger bevel gear 31 fixed on the lower end of the stationary supporting member 10. A suitable cover 32 is mounted over the upper end of the U-shaped support where its arms 13 and 14 are journaled to the support 10, and a spherical guard member 33 is secured to the arms around the fan motor and blades.

A clutch member 34 is provided on the end of rod 35 (Figs. 2 and 4), and is adapted to engage either gear 26 or the casing 24 on the fan motor 15. A neutral space 36 is provided to facilitate the shifting of the clutch member.

In operation, when the circuit is closed through a suitable switch (not shown), current is conducted to the motor by means of the conductors and brush contacts. When the motor armature shaft 22 begins to rotate with the fan blades 21 secured thereto, the gear train 24 will also be actuated as shown by arrows and will turn the worm 25, driving it around the stationary gear 26, causing the motor casing and fan blades to rotate on the shaft 16. This rotation will revolve shaft 17 and through the medium of bevel gears 27, 28, flexible shafting 29 and bevel gears 30, 31, the U-shaped support will rotate around the stationary support 10 at a different speed than that of the motor casing.

In this manner the fan blades will be rotating and revolving around the axis of shafts 16 and 17, said axis being transverse to the axis of rotation of the U-shaped member comprising the arms 13 and 14. Thus the air stream from the two sets of fan blades is continuous and its direction is constantly changing, the air being directed outwardly, and in every direction from the blade driving unit during the completing of a cycle of movement of the fan and its supporting arms.

When the clutch member 34 and the gear 26 are engaged the rotatable members will operate as stated above, but when the clutch is shifted, gear 26 is freed from the shaft 16 and the casing 24' is locked against rotation. Then the only movement is that of the fan blades on their shaft 22.

The bevel gears 27, 28, 30, 31 and flexible shafting 29 may be replaced by any suitable mechanism such as rigid shafting and universal joints, and may, if desired, be run through the arm 14 of the U-shaped support, the latter being made hollow.

My invention obviously is not restricted to the particular embodiment thereof herein illustrated and described.

Having disclosed one illustrative embodiment of my invention, what I claim and desire to secure by Letters Patent is:

1. A fan comprising a stationary support, a substantially U-shaped support rotatable thereon, and a power-driven fan unit mounted between the arms of said U-shaped support and adapted

to rotate completely on an axis transverse to the axis of rotation of said U-shaped support.

2. A fan comprising a stationary support, a substantially U-shaped support rotatable thereon, a power unit mounted between the arms of said U-shaped support and adapted to fully rotate on an axis transverse to the axis of rotation of said U-shaped support, fan blades mounted on said power unit, and means connected with said power unit for rotating said blades, power unit, and U-shaped support.

3. A fan comprising a stationary support, a U-shaped support rotatable thereon, a power driven fan unit, means for supporting said fan unit for complete rotation on said U-shaped support on an axis transverse to the axis of rotation of said U-shaped support, said means comprising a shaft having one end rigidly secured to one arm of said U-shaped support and the other end journaled in said fan unit, drive means connecting said fan unit and said shaft, a shaft rigidly secured in said fan unit and journaled in the opposite arm of said U-shaped support, and drive means between said U-shaped support and the shaft journaled therein to rotate said support.

4. A fan comprising a stationary support, a rotatable support mounted thereon, an electrically driven fan unit on said rotatable support adapted to continuously rotate on an axis transverse to that of said rotatable support through successive complete revolutions in the same direction, brush contact members on said rotatable support and fan unit to permit electrical connection between a source of electricity and said fan unit, and drive means connected with said fan unit for actuating said moving parts.

GERHARD FREDERICK ALBERS.